09/909,574

Filed:

July 20, 2001

INFORMATION DISCLOSURE STATEMENT

MAY 0 6 2002

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicants:

Frank A. Skraly and Martha Sholl

Serial No.:

09/909,574

Art Unit:

1645

Filed:

July 20, 2001

Examiner:

Not Yet Assigned

EGH GENTER 1600/2900

For:

PRODUCTION OF POLYHYDROXYALKANOATES FROM POLYOLS

Assistant Commissioner for Patents

Washington, D.C. 20231

INFORMATION DISCLOSURE STATEMENT

Sir:

Pursuant to 37 C.F.R. §1.56 and 37 C.F.R. §1.97, Applicants submit an Information Disclosure Statement, including five (5) pages of PTO Form-1449 and a copy of each document cited therein.

This Information Disclosure Statement is being filed under 37 C.F.R. § 1.97(b) prior to a first Office Action on the merits. It is believed that no fee is required with this submission. However, should a fee be required, the Commissioner is hereby authorized to charge any required fees to Deposit Account No. 50-1868.

Foreign Documents

<u>Number</u>	Publication Date	<u>Patentee</u>	Country
WO 00/011188	03-02-2000	Metabolix, Inc.	PCT
WO 99/14313	03-25-1999	Metabolix, Inc.	PCT
WO 98/39453	09-11-1998	Monsanto Company	PCT
WO 99/61624	12-02-1999	Metabolix, Inc.	PCT

09/909,574

Filed:

July 20, 2001 INFORMATION DISCLOSURE STATEMENT

Publications

BALDOMÁ & AGUILAR, "Involvement of Lactaldehyde dehydrogenase in several metabolic pathways of Escherichia coli K12," J. Biol. Chem. 262:13991-96 (1987).

BOENIGK, et al., "Fermentation of glycerol to 1,3-propanediol in continuos cultures of Citrobacter freundii," Appl. Microbiol. Biotechnol. 38:453-57 (1993).

BRAUNEGG, et al., "Polyhydroxyalkanoates, biopolymers from renewable resources: physiological and engineering aspects," J. Biotechnology 65:127-61 (1998).

CADWELL, et al., "Randomization of genes by PCR mutagenesis, PCR Methods and Applications 2:28-33 (1992).

DENNIS, et al., "Formation of poly (3-hydroxybutyrate-co-3-hydroxyhexanoate) by PHA synthesis from Ralstonia eutropha," J. Biotechnology 64:177-86 (1998).

DOI, "Microbial Synthesis, Physical Properties, and Biodegradability of Polyhydroxyalkanoates," Macromol. Symp. 98:585-599 (1995).

DOI, et al., "Biosynthesis and characterization of poly(3-hydroxybutyrate-co-4hydroxybutyrate) in Alcaligenes eutrophus," Int. J. Biol. Macromol. 12: 106 (1990).

ERICKSON, et al., "Enhanced biodegradation of polychlorinated biphenys after sitedirected mutagenesis of a biphenyl dioxygenase gene," Appl. Environ. Microbiol. 59:3858-62 (1993).

FORAGE & FOSTER, "Glycerol fermentation in Klebsiella pneumoniae: functions of the coenzyme b12-dependent glycerol and diol dehydratases," J. Bacteriol. 149:413-419 (1982).

HERMES, et al., "Searching sequence space by definable random mutagenesis: improving the catalytic potency of an enzyme," *Proc. Natl. Acad. Sci. USA* 87:696-700 (1990).

HIRAMITSU, et al., "Production of Poly(3-hydroxybutyrate-co-4-hydroxybutyrate) by Alcaligenes Latus," Biotechnol. Lett. 15:461 (1993).

HO, et al., "Site-directed mutagenesis by overlap extension using the polymerase chain reaction," Gene 77:51-59 (1989).

HOMANN, et al., "Fermentation of glycerol to 1,3-propanediol by Klebsiella and Citrobacter strains," Appl. Microbiol. Biotechnol. 33:121-26 (1990).

JOHNSON & LIN, "Klebsiella pneumoniae 1,3-propanediol:NAD⁺ oxidoreductase," J. Bacteriol. 169:2050-54 (1987).

U.S.S.N.: 09/909,574 Filed: July 20, 2001

INFORMATION DISCLOSURE STATEMENT

KELLOG, et al., "Plasmid-assisted molecular breeding: new techniques for enhanced biodegradation of persistent toxic chemicals," *Science* 214:1133-35 (1981).

KIMURA, et al., "Production of Poly(3-hydroxybutyrate-co-4-hydroxybutyrate) by *Pseudomonas Acidovorans*," *Biotechnol. Lett.* 14:445 (1992).

KUNIOKA, et al., "New bacterial copolyesters produced in *Alcaligenes eutrophus* from organic acids," *Polym. Commun.* 29:174 (1988).

MADISON & HUISMAN, "Metabolic engineering of Poly(3-Hydroxyalkanoates): From DNA to Plastic," *Microbiology and Molecular Biology Reviews* 63:21-53 (1999).

MORGAN, "The rapidly changing world of 1,4-butanediol," *Chemistry & Industry*, pp. 166-88 (1997).

NAKAMURA, et al., "Microbial synthesis and characterization of poly(3-hydroxybutyrate-co-4-hydroxybutyrate)," *Macromol*. 25:4237-41 (1992).

REIDHAAR-OLSON, et al., Combinatorial cassette mutagenesis as a probe of the informational content of protein sequences," *Science* 241:53-57 (1988).

SAITO & DOI, "Microbial synthesis and properties of poly(3-hydroxybutyrate-co-4-hydroxybutyrate) in Comamonas acidovorans," *Int. J. Biol. Macromol.* 16:99 (1994).

SAITO, et al., "Microbial Synthesis and properties of Poly(3-hydroxybutyrate-co-4-hydroxybutyrate)," *Polym. Int.* 39:169 (1996).

SKRALY, et al., "Construction and characterization of a 1,3-propanediol operon," *Appl. Environ. Microbiol.* 64:98-105 (1998).

SÖHLING & GOTTSCHALK, "Molecular analysis of the anaerobic succinate degradation pathway in Clostridium kluyveri," *J. Bacteriol*. 178:871-880 (1996).

SPIEKERMANN, et al, "A sensitive, viable-colony staining method using Nile red for direct screening of bacteria that accumulate polyhydroxyalkanoic acids and other lipid storage compounds," *Arch Microbiol.* 171:73-80 (1999).

STEMMER, "DNA shuffling by random fragmentation and reassembly: in vitro recombination for molecular evolution," *Proc. Natl. Acad. Sci. USA* 91:10747-51 (1994).

STEMMER, "Rapid evolution of a protein in vitro by DNA shuffling," *Nature* 370:389-91 (1994).

U.S.S.N.: 09/909,574 Filed: July 20, 2001

INFORMATION DISCLOSURE STATEMENT

STREEKSTRA, et al., "Overflow metabolism during anaerobic growth of *Klebsiella aerogenes* NCTC 418 on glycerol and dihyroxyacetone in chemostat culture," *Arch. Microbiol.* 147:268-75 (1987).

VALENTIN, et al., "Identification of 4-hydroxyhexanoic acid as a new constituent of biosynthetic polyhydroxyalkanoic acids from bacteria," *Appl. Microbiol. Biotechnol.* 40:710-16 (1994).

VALENTIN, et al., "Identification of 4-hydroxyvaleric acid as a constituent of biosynthetic polyhydroxyalkanoic acids from bacteria," *Appl. Microbiol. Biotechnol.* 36:507-14 (1992).

VAN BEILEN, et al., "DAN sequence determination and functional characterization of the OCT-plasmid-encoded *alkJKL* genes of *Pseudomonas oleovorans*," *Mol. Microbiol.* 6: 3121-36 (1992).

VASILIOU, et al., "Eukaryotic aldehyde dehydrogenase (ALDH) genes: human polymorphisms, and recommended nomenclature based on divergent evolution and chromosomal mapping," *Pharmacogenetics* 9:421-34 (1999).

09/909,574

Filed:

July 20, 2001

INFORMATION DISCLOSURE STATEMENT

Remarks

This statement should not be interpreted as a representation that an exhaustive search has been conducted or that no better art exists. Moreover, Applicants invite the Examiner to make an independent evaluation of the cited art to determine its relevance to the subject matter of the present application. Applicants are of the opinion that their claims patentably distinguish over the art referred to herein, either alone or in combination.

Respectfully submitted,

Patrea L. Pabst

Reg. No. 31,284

Dated: April 26, 2002

HOLLAND & KNIGHT LLP One Atlantic Center 1201 West Peachtree Street, N.E. Suite 2000 Atlanta, Georgia 30309-3400 404-817-8473 FAX 404-817-8588 www.hklaw.com

09/909,574

Filed:

July 20, 2001

INFORMATION DISCLOSURE STATEMENT

Certificate of Mailing under 37 C.F.R. § 1.8(a)

I hereby certify that this Information Disclosure Statement, along with any paper referred to as being attached or enclosed, is being deposited with the United States Postal Service on the date shown below with sufficient postage as first-class mail in an envelope addressed to the Assistant Commissioner for Patents, Washington, D.C. 20231.

Date:

April 29, 2002

ATL1 #521414 v1